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The End of American Wilderness

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Environmental historians should face the problem of wilderness, which is a problem of definition, or of the failure to frame our analysis of wilderness precisely. If historians continue to treat wilderness only as an idea, the meaning of which has changed over time, they will have little to contribute to the preservation of natural environments and, *reductio ad absurdum,* "wilderness" will become a city park or perhaps a suburban lawn.[1] Historiographically, wilderness will cease to be a place or even an idea and become only a word. Maybe it already has.

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My thesis may be stated simply: We are in the wilderness about wilderness. The central reason for the confusion is our inability or reluctance to treat technology as a crucial factor. To argue the case, I will assay a number of definitions of wilderness, and indicate the failure of these definitions to define what is called wilderness in Alaska (not always officially designated wilderness units), given the availability of certain technologies. In the conclusion, I will deal briefly with policy for existing natural environments.

But first, if you do not think that the meaning of wilderness has become too vague, your attention is called to the title of a recent television documentary about Alaska, narrated by Lorne Green and entitled "New Wilderness," as though our lawmakers can declare an area "wilderness" and make it so, as though wilderness can be "new." The Kachemak Bay Wilderness Lodge, a few miles across the bay from the town of Homer, has been listed as America's best wilderness lodge in Sterling Publications' "America's Best 100"; apparently, the trail to wilderness lodges is brightly blazed by their own version of the Michelin guidebook. Still another example of confusion over the meaning of wilderness comes from a summer issue of the *Homer News*.[3]

An Alaska Wilderness Marathon was planned for the Kenai Peninsula last summer. It would cross fifty miles of the Kenai National Moose Range, through which motorized access was requested to set up a check point. Runners could carry portable rafts, tents and other modern accoutrements needed to "rough it" outdoors. Michael Hedrick, manager of the refuge, denied a permit, saying, "There have to be places where some species of wildlife have top billing." The organizer of the race was a biologist with the Alaska State Fish and Game Department; he responded: "I deal with environmental issues every day and this just isn't an environmental issue." He said that a dog sled race was held in the Gates of the Arctic National Wildlife Refuge last year, and argued: Why not a marathon through the Kenai Moose Range? Ted Stevens, one of Alaska's U.S. senators, persuaded the federal agency to reverse Hedrick's decision. Stevens told a newspaper reporter: "The agency implied that the traffic, 50 to 75 pairs of feet, running over the Resurrection Trail is too much. I couldn't buy that. If people can't walk or run in the Alaska wilderness, what can be in it?"

Evidence from the wilderness marathon controversy supports the notion that citizens who wish to protect the natural environment may sometimes have reason to fear public employees charged with its protection as much as exploitative entrepreneurs. Another example of this problem, and also of the strange ways in which the word "wilderness" is used, appears in a questionnaire distributed by the Alaska Division of Parks. Respondents were asked whether they favored development of recreational facilities in Kachemak Bay State Wilderness Park. The developments included boat-launch facilities, lodges, shelter cabins, and landing strips for airplanes.[4] (The response for both the Wilderness Park and neighboring State Park was overwhelmingly for low or no development.)

If you still do not think that "wilderness" is a vague concept, so vague that it may not really be a place anymore, read the third part of John McPhee's *Coming Into the Country,* in which the Yukon River people are forever proclaiming themselves to be genuine frontiersmen and fron-

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tier women while they criticize their neighbors for the lack of ennobling frontier virtues. One of them characterizes another as more frontiersman-like because he hand-loads his ammunition.[5] The hand-loader thinks that **how much** technology is the issue. He is correct but the insight dissolves when he says: "people who have tried to get away from technology completely have always failed. Meanwhile, what this place has to offer is wilderness that is nowhere else." One may read that part of McPhee's book as an attempt to determine how much technology is permissible in a wilderness, and to measure it by the amount of technology available where civilization ends, which supports my thesis that technology is the crucial variable.

Sadly, however, McPhee concludes that he must carry a gun out of fear of the bears, which brings us to solitude, one quality invoked to identify wilderness. According to this definition, wilderness provides solitude that inspires a kind of subtle unease and quiet wonder. The definition is one of a large category that dwells on the literary and psychological effects of wilderness on the individual. Wilderness (or a natural environment where one is alone) inspires poetry, impresses one philosophically with, for example, man's insignificance, tempering his destructive impulses, or inspires a kind of delicious fear. McPhee's fear of bears brings home to him a deep philosophical contradiction. He writes: "If bears were no longer in the country, I would not have come. I am here... because they survive. So I am sorry — truly rueful and perplexed — that without a means of killing them I cannot feel at ease."[6] McPhee thought he needed a gun to travel alone in a natural environment relatively unpopulated by other humans. He might have carried a toy cap pistol to frighten the animal, or more mundanely, a couple of saucepans to rattle the bears. Better still, using no technology whatever, he might have done what a Swedish-American pioneer in Alaska once recommended: "Sing loudly on the trail." (I know of no case of an experienced outdoorsman being attacked without provocation by a bear, although I admit the point hangs on the definition of provocation.)[7]

In his firearm, McPhee had the power of industrial technology to help him appreciate the wilderness. There was more than a gun in his wilderness. He was carried there in airplanes and in boats propelled by outboard motors. There is a road to Eagle; it is gravel, narrow, tortuous and not maintained from October to April, but for half of the year it will take you 160 miles to the Alaska Highway, which will in turn get you by auto to Chicago (if the urban wilderness happens to be your cup of tea). All-terrain vehicles and snowmobiles penetrate McPhee's country, along with airplanes equipped with "tundra tires" and skis to reduce the need for cleared landing strips. Bulldozers tear up the country looking for gold, chainsaws reduce the spare forests for fuel, just as axes and saws — even power saws at an early date — did to feed steamboats from the late nineteenth century to quite recent times. Voices fill the radio waves to reduce still further the isolation from urban environments. Probably, like many rural Alaskans, some of McPhee's people have erected satellite antennae for television reception of the same adolescent inanities that are inflicted on the remainder of American society.

There is no solitude (read "wilderness") if an aircraft may thunder overhead at any time and land, if a skiff with a noisy outboard motor

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may splash by your "wilderness" beach at any time, if jet boats ignore low water to crunch over sandbars on their way up a remote stream, if a snowmobile marathon can scatter wildlife, if a bear's misunderstood ferocity can be silenced by a bullet before the animal's intentions are determined. So much for solitude as a sign of wilderness, given the widespread use of modern technology in Alaska.

In one sense, solitude is only a variation of Frederick Jackson Turner's famous criterion. According to him, the frontier disappears, and by implication wilderness too, when a certain man-land ratio changes. Turner and the Superintendent of the Census of 1890 "regarded as unsettled" any area with less than two inhabitants in a square mile.[8] (Table 1.) The number of square miles per person in Alaska dropped, between 1880 and

Table 1

Date	Population	Square Miles Per Person
1880	33,400	17.5
1890	32,000	18.3
1900	63,600	9.2
1910	64,400	9.1
Jan. 1 1920	55,000	10.65
Oct. 1 1929	59,300	9.9
Oct. 1 1939	72,500	8.1
Apr. 1 1950	128,600	4.6
Apr. 1 1960	226,200	2.6
1970	300,400	1.95
1980	401,800	1.45

The figures are rounded, and 586,000 square miles is divided by the population. Source: A.M. Rollins, comp. *Census of Alaska: Numbers of Inhabitants, 1792-1970* (Anchorage: University of Alaska Anchorage Library, 1978). U.S. Bureau of the Census, *General Social and Economic Characteristics: United States Summary, 1980.*

1980, from a high of 18.3 square miles in 1890 to 1.45 in 1980. By this measure, Alaska, as a whole, is still a frontier region. But that conclusion is unsatisfactory for a couple reasons. First, the method is arbitrary, and fails to account for the distribution of population. As recently as 1950, the population of Alaska was only 27% urban; now the population is about 50-50, urban-rural. Most of the urbanites and suburbanites live in an area embracing Anchorage, part of the Kenai Peninsula, and the lower Matanuska and Susitna river valleys near the big city. The concentration of population means that large areas of Alaska are sparsely settled; with a low man-land ratio , they may qualify as wilderness. However, such areas are **accessible** with modern transportation technologies, and **vulnerable** if other technologies employed in the war against nature are

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introduced. One person (it does not require two) could make a mess of his one square mile even in 1890. Imagine what a bulldozer operator can do to a square mile quickly, nowadays. Instead of counting people in rural areas, machines should be counted in the entire area which they may affect.

Scrappy data on airplanes will illustrate the importance of counting machines that permit access to what people call wilderness. As early as 1944, sixty-two airplanes were used by hunting parties flying out of Anchorage, a city of perhaps six or seven thousand people then.[9] In one month of the following year, Merrill Field, the town's airstrip, had 10,000 landings and take-offs, more than LaGuardia Field in New York City.[10] There were twenty-nine "air carriers" operating out of Anchorage in 1947, or about one air service for every 325 people in town.[11] These were mainly bush pilots, taking people to and from natural environments. In 1956, 77% of the hunters who traveled by air were successful in attempting to kill caribou from the Nelchina herd; only 20% of the hunters traveling on foot were successful, although they came a long part of the way by auto. Later regulations prohibited aircraft from driving animals to exhaust them and make them easier to kill, and also prohibited herding animals to landing places, shooting from the air, and spotting (locating) animals from the air.[12] Spotting is still common. In 1960 there was one aircraft for every 194 Alaskans, including children, and in 1967 there was one for every 100 persons. That year, one in fifty residents had a pilot's license, and Lake Hood in Anchorage was the largest seaplane base in the United States. A Federal Aviation Administration pamphlet describing all of this is entitled *The Alaskan Region: A Family Affair.*[13]

Counting machines is not the most dramatic way to argue that accessibility made possible by modern technology is the important determinant of wilderness status. Instead, consider a place which would, at first thought, be chosen by many people as the least accessible spot in Alaska: the slopes of Mount McKinley, the tallest mountain in North America. Surely, "Denali" (as romantics prefer to call the mountain) can be "regarded as unsettled" and offers the psychological rewards of solitude. Not necessarily true, during the summer months. In 1970, 124 people were on the mountain, in 1976 nearly 600, a number topped in each of the next four years.[14] During early May of 1983, perhaps 200 people were already on the mountain or waiting for an air taxi to fly them from Talkeetna to Kahiltna Glacier, elevation 7,000-8,000 feet. This year one pilot told a reporter: "Packing the plane is like loading a sports car for a two-week vacation."[15] Size and distance is difficult to estimate from Kahiltna Glacier except during climbing season, when perspective is provided by other mountaineers; in the words of the pilot, "you can see people coming into view. . . and you can see them all day long." From Kahiltna Glacier, climbing parties may be guided as high as 14,000 feet.[16] The mountain is 20,300 feet in elevation. One guide climbed it twenty-five times.[27] If you do not have the physical stamina, the sense of adventure, or the suicidal drive it takes to ascend Mount McKinley, you can sightsee around the mountain by airplane, or fly to a camp on Ruth Glacier that offers sled dog tours.

A third definition of wilderness refers to the biological integrity of an area and the absence of man and his works. In the wilderness Act of 1964 that means an area "where the earth and its community of life are untrammeled by man. . . ," an area which "generally appears to have been

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affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."[18] How noticeable are the works of man, his technology, in remote areas of Alaska? In answer to that question, this paper should, but will not, discuss the greenhouse effect on the earth's climate, or "Arctic haze," or the sight and the sound of airliners flying the Great Circle Route between Europe and Asia. Instead, a single example will suffice here to demonstrate that man's work is ubiquitous.

The example is Anaktuvuk Pass, in the Brooks Range, and its residents in 1963, including a five-year-old Eskimo girl named Dorothy Ahgook. In that year the *Tundra Times* reported unhappily that Dorothy had "the highest, or one of the highest radiation counts of any person in the United States."[19] Her sister Vera, one year older, had a high count too. The village council was told by a representative of the Atomic Energy Commission that "whole body counts" of radiation — strontium 90 and cesium 137 — had increased substantially in Anaktuvuk. A reporter for the *Tundra Times* claimed that residents had "about forty times the amount of radiation absorbed by the average U.S. citizen," another record for Anaktuvuk.

The problem was ecological. Radioactive debris from the atmospheric testing of nuclear bombs had been carried by air currents over the Arctic. Common plants of the tundra, lichens and sedges, got their nutrients from dust in the air as it fell with rain and snow, not from the soil, and stored what they absorbed. Migrating caribou had several times as much strontium 90 as the flesh of cattle elsewhere in the U.S. The Eskimos of Anaktuvuk relied heavily on caribou for food. Among some Alaskan Natives, the marrow of caribou bone is especially favored.

What the long-range effects are of overdosing radiation by the people of Anaktuvuk is not clear. Events there did help to cancel the Atomic Energy Commission's Project Chariot, to blow a hole on the Arctic coast east of Anaktuvuk. Opposition to Project Chariot united northern Alaskan Eskimos politically for the first time and led to publication of the *Tundra Times,* which became an influential voice for Eskimo causes. (Physicist Edward Teller, in promoting Chariot, told an Anchorage audience jokingly: "If your mountain is not in the right place, just drop us a card.")[20] Anaktuvuk Pass is now the principal village in Gates of the Arctic National Park and Preserve, though not in an area designated wilderness. The village is just north of Mt. Doonerak, made famous by Robert Marshall, founder of the Wilderness Society.[21] Residents still hunt, fish and gather in the region. The *Alaska Geographic* reported in 1981: "A desire to maintain cultural integrity for Native communities and rural life styles within the newly created national parks generated provisions [in the Alaska National Interest Lands Conservation Act of 1980] to continue subsistence activities including hunting, fishing and trapping using motorized vehicles such as snow machines and motorboats *where traditionally practiced.*"[22] And so much for the natural biological integrity of wilderness areas, where man's technology is unnoticeable.

The fourth and final characteristic of wilderness considered here is the oldest, in many ways the most attractive and, at first glance, the easiest way to identify wilderness. In this scheme, wilderness is measured by the presence of wildlife, especially the large animals, living more or less as they did before the appearance of mechanized man. The abundance and

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variety of wild creatures in a natural environment defines the wilderness condition.

Most of the wild species that were in Alaska when the Russians came in 1741 are still there, though certain species have been threatened over time, for example, the whales, fur seals and otter at sea, and large mammals on land during the gold rushes. One may still see the giant Kenai moose going its own way, and the formidable Kodiak brown bear still ranges the island after which it was named. But "things are not what they seem." The presence of wildlife in Alaska is due to the rise of conservation as a potent political movement, and a social institution — wildlife management — created to achieve the goals of conservationists has itself become heavily dependent on technology. Not even the brown bear, once called by DeWitt Clinton, "the ferocious tyrant of the American Woods,"[23] can count on roaming freely in his territory without being shot with a tranquilizer, tagged and equipped with a radio transmitter.

Management of Alaska's wild animals began long before such high technology was available, and predates wildlife management as a profession. In the 1830s, the Russians introduced conservation practices to the Pribilof Island fur seal rookeries.[24] The United States, after 1870, also regulated the killing of fur seals on land. The decisions of both governments followed periods of indiscriminate slaughter. Alaska's first game laws were a response to wholesale destruction of edible wildlife during the gold rushes northward in the late nineteenth century and early in the twentieth. A decision made late in the nineteenth century to import reindeer from Siberia for the relief of Eskimos suffering from the commercial depletion of marine mammals contributed to a little-publicized ecological disaster. The reindeer competed with the native caribou for browse, overgrazing the range. Both populations crashed dramatically in the 1930s and 1940s. Meantime, the federal Alaska Game Commission policed the health of other wildlife, a job made easier by the low human population.[25]

Major demographic, economic, political and technological changes occurred during and after World War II. "Traditional" uses of aircraft, snowmobiles and motorboats became common **after** the war. The population tripled, federal spending for defense boomed the economy, and the new state of Alaska assumed management of its resources in 1959, when public support of science was more generous than it had been before the war. High-tech wildlife biology came to Alaska with these changes. The Eskimos were not uniformly delighted.

The *Tundra Times,* in 1966, reported that two investigators from eastern universities had killed several polar bears while conducting a scientific experiment. The *Times* did not have all of its facts straight, but using other sources as well, a rough picture of what happened can be sketched. The two biologists came to Alaska to develop methods of immobilizing the bears in order to tag them and, eventually, attach radio transmitters which would be monitored by satellite and thus track the animal around its frigid habitat. Two airplanes were used, one to spot the bear; when spotted, another airplane would deposit the scientists someplace ahead and return to help the first aircraft herd the bear toward the waiting savants, who were armed with a rifle and tranquilizing dart, or syringe. The syringe was loaded with succinylcholine chloride; the size of the dose was determined by an estimate of the bear's size, made by the pilot of

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the spotter airplane. When the bear was chased, perhaps exhausted, within range, it was shot with the dart, then marked with a long-lasting red dye. Splattered would be a better word than marked; the dye could not be sprayed on because of low temperatures so it was dumped on the animal's backside.

The first polar bear to be anaesthetized stirred during the handling and was given another dose of succinylcholine chloride; it died. The second bear was "marked recovered," the scientists reported; it may be the bear that was shot soon thereafter by a hunter who easily could have spotted its red posterior on the white landscape. (The hunter was distressed because the fur was spoiled.) A third bear was not immobilized. The fourth bear that was hit died in five minutes; the fifth in ten minutes; the sixth in twenth-five minutes. Succinylcholine chloride had no effect on the next two bears coming within range, according to the two investigators. They also anaesthetized two other polar bears, but their data about these animals are incomplete. The score: four bears killed and three immobilized and marked, one of which was shot by a hunter shortly thereafter. The experiment was reported at a national conference and in *Scientific American*. Newspaper reports emphasized the derring-do. Whether any science needed to protect the polar bear emerged from the carnage (as both biologists firmly believe) is moot because the effect of the drug on large animals apparently was known before the episode.[26]

More than 3,000 polar bears have been immobilized, marked and studied worldwide since then, out of a total population estimated at 20,000-25,000, or 12% to 15%. Alaska's polar bears number either 6,000 to 9,000 animals, or 3,000 to 5,000, depending upon the expert you consult. The discrepancies suggest that all of the capturing and tracking can only have been partially successful. The presence of scientists in the polar bears' Alaskan wilderness has not even resulted in wildlife management program for the animal. The Marine Mammal Protection Act of 1972 gave supervision of polar bears to the federal government. Sport hunting was prohibited but Congress allowed Natives the right to hunt the animal using "traditional" methods at any time, without bag limits and with no protection for females and cubs. Products made from the bear's skin may be sold, reviving the specter of market hunting which wildlife protectionists thought they had banished decades ago. Clearly, the polar bear is not "master of the northern ice," as a federal biologist titled his article about Nanook.[27] Man and his technology are.

Biologists continue to drug and tag Alaska's wild animals and to equip them with radios. An article in *Alaska* magazine by a state biologist entitled, "Wildlife That Goes Beep-beep," describes how transmitters have been attached to brown bears, black bears, polar bears, caribou, moose, wolves, walruses, and geese.[28] Another article in the same magazine reports how the Forest Service and the State Department of Fish and Game moved mountain goats by helicopter to a place where they could be seen by tourists from a highway. The reclusive animals were tranquilized with a dart shot from a helicopter, examined, tagged and then carried in a net by helicopter to a place where motorists could better appreciate the Kenai "wilderness."

"Darting wildlife from the air is tricky," said one biologist. "A goat can travel some distance in the seven to eight minutes it takes the drug to work... If a goat reaches a steep slope before going down, chances of

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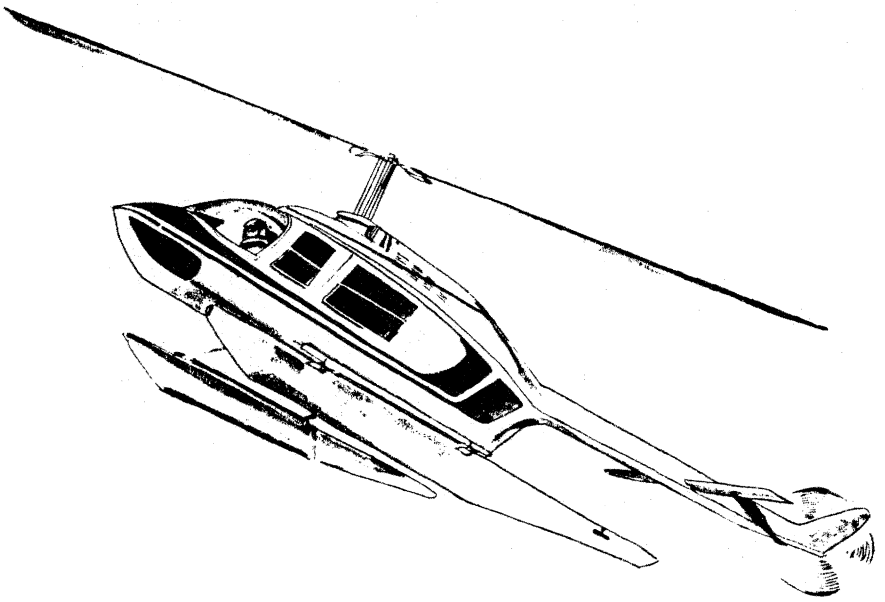
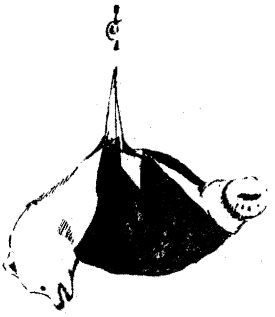
retrieving it are slim."

The state undertook a large investigation during the 1970s to explain the disappearance of moose from an area in the interior that is not officially a wilderness unit. Moose is a favorite game meat of Alaskans. The wolves were blamed by the hunters, and when the state decided to shoot





some wolves, the national news media triggered a popular uproar. In the experiment, more than 100 adult moose were tranquilized and fitted with radio collars or other identification devices. One hundred twenty calves were also equipped with radios; this was accomplished by chasing the cow away with a helicopter. One hundred wolves were killed, sixty wolves were removed from the area, and another 150 wolves were given radio collars.

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Twenty-three adult brown bears were also equipped with radios, and forty-seven were drugged and taken miles away by helicoper, airplane and truck; 70% returned in sixty days. The main culprit was the brown bear, who feasted on baby moose and cut the calf survival rate which eventually reduced the population of moose.[30]

Did this massive intrusion of technology into a natural environment end the wolf control controversy? No. It and other studies have led to specific population goals for moose, caribou and wolves in several areas. Statistics on the effects of these management practices on the individual animals are not readily available. One hopes that mortality rates are lower than they were in the polar bear experiment, or in the record of management in Yellowstone Park, where eighty-six grizzlies have been killed by wildlife professionals since 1970, most by drug overdoses.[31]

The public is apparently not alarmed by the adventures of its wildlife managers. Perhaps people have become accustomed to such activities by watching Marlin Perkins, Jacques Cousteau and William Conrad tinker with wild animals weekly on television. In outdoor magazines, thrilling stories by biologists confronting dangerous wild beasts often replace the bear stories of hunters. Frequently the articles feature cute pictures of, for example, a tranquilized brown bear embracing a biologist, or a giant sedated polar bear resting on the lap of a scientist, or a wildlife expert with his arm around the neck of a cow moose. Such photographs are becoming as common in outdoor magazines as pictures of big game hunters posing with rifle and kill were in former times.

So, if you spot a mountain goat while visiting Alaska, remember that it may have been placed there for you to see, and to provide "photo opportunities" (a term that wildlife managers have borrowed from the public relations industry). If you agree with Aldo Leopold that knowledge alone of the presence of wildlife certifies an area's classification as wilderness, remember that the biggest game animal out there may have tatooed gums, a tag on its ear, and go beep-beep. Even the fish in your Alaskan wilderness may have been put there by humans. In Kachemak Bay, state biologists have planted thousands of young salmon where they cannot reproduce. The fish return at the end of their cycle to mill around, vainly searching for a fresh-water stream with gravel in which to spawn, turning red and black and decaying. Fishermen are invited to catch them by net or snag in an orgy of unsportsmanlike "taking" that would chill the spirit of Izaak Walton. The other rotting salmon are left for the eagles, ravens, and bears.

Is all of this wildlife management — or farming, or ranching, or zookeeping? Sam White was a veteran warden who pioneered the use of airplanes when he worked for the Alaska Game Commission. In the late 1970s I asked him what he considered the gravest threat to Alaskan big game. He answered in one word: "Biology." His judgment was too severe. Some reductionist science and high-tech game management may be necessary to the animals' survival. But modern technology has made "wildlife" management a contradiction in terms, and these days, the presence of indigenous animals does not necessarily identify wilderness.

In 1967 Robert Heilbronner published his controversial article which asked: "Do Machines Make History?" The answer sounded too much like technological determinism.[32] But if machines do not always make history, machines do unmake wilderness. The lesson for policy makers

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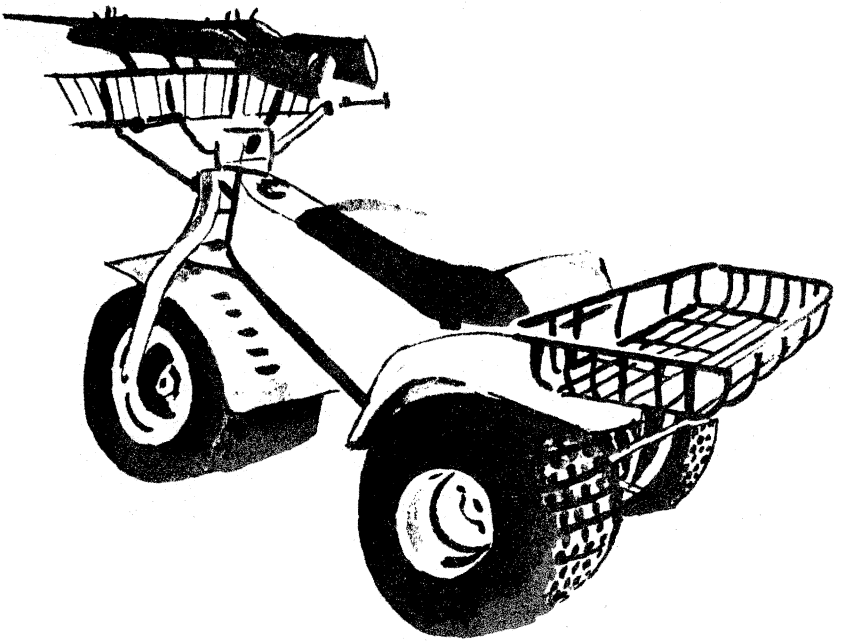
is fairly clear. Just as early conservationists leaned heavily on technological obsolescence and outright prohibition of certain technologies to protect wildlife, the fisheries and national parklands, society should now move with deliberate speed to restrict the use of destructive technologies in relatively untouched natural environments. Congress should legislate off-road vehicles, all-terrain vehicles, airplanes, helicopters, snowmobiles and motor boats out of such areas, except when the machines are on rescue missions. Purchase anywhere of an off-road vehicle for recreational purposes should be considered *prima facie* evidence of intention to engage in destructive trespass, and the sale of these vehicles should be prohibited except for occupational purposes. This action would be a major step forward to environmental sanity, in town as well as in the woods (and, incidentally, improve America's balance of payments with Japan).



What about policy for high-tech wildlife management? The wolf-moose-bear study concluded with the statement: "Unfortunately, the answers we have found, although they provide valuable clues and good basic information for other parts of Alaska, apply only to the Nelchina Basin and our study area, and for the years 1975 through 1981."[33] In other words, the study was inconclusive for Alaska as a whole and will have to be repeated again and again in the Nelchina basin and all other places where the moose population declines. The scientific caution is admirable in principle, consistent with ecological theory, and promotes full employment of wildlife technicians. It also raises an economic question: Has the cost of management been translated into dollars-per-pound of moosemeat? Political and ethical questions arise too. The Alaska State Department of Fish and Game defers to wildlife advisory boards for policy based on such experiments, and these advisors encourage the management of

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animals for use by people, either to kill and eat, for "photo opportunities," or to protect people from wild creatures. In addition to these concerns, which will not disappear from Alaska in the foreseeable future, the beasts should be managed and studied with the welfare of the animals themselves a consideration. The ethical issues associated with animal science are almost never addressed in print by the biologists involved. Meanwhile, in response to pressure from animal rights organizations, the federal government and universities in the contiguous United States have created insitutions to oversee the ethical use of animals in research. University committees, consisting of scientists mainly but also with public representatives and representatives from the humanities, now appraise an experiment with the animal's welfare in mind. Does it suffer unalleviated pain or distress and if so, is the distress justified, given the significance of the experiment? Perhaps similar institutions are needed to evaluate wildlife studies.

To conclude: existing definitions of wilderness as a place where there is solitude, a low man-land ratio, biological integrity, and wildlife, do not work because disruptive modern technologies are not taken into account. Technologies that provide easy access have threatened Alaskan natural environments increasingly since the end of World War II. Between then and the 1960s, Alaska lost its frontier innocence and wilderness became only a word, not a place. Ironically, wilderness in America may have ended at the same time that society, by passage of the Wilderness Act of 1964, decided it was worth saving. There are still ways, however, to reverse or at least to ameliorate the damage. ER

ENDNOTES:

1. The tendency to view the history of wilderness as the history of an idea comes, of course, from the well-deserved success of Roderick Nash's Wilderness and the American Mind (New Haven: Yale University Press, 1967).

2. Reported in a brochure for the Lodge, 1984.

3. July 12, 1984.

4. Alaska Division of Parks, 1982.

5. Coming Into the Country (New York: Bantam Books, 1981; originally published 1977) 195.

6. Page 339.

7. The issue is discussed in M. Sherwood, Big Game in Alaska: A History of Wildlife and People (New Haven: Yale University Press, 1981) 36-38.

8. Frederick Jackson Turner, "The Significance of the Frontier in American History," in Turner, The Frontier in American History (New York: Henry Holt, 1950; originally published 1920. The paper was read in 1893) p. 3. U.S. Census Office, Compendium of the Eleventh Census, 1890, Part I (Washington: GPO, 1892) p. xlv.

9. Annual Report, Alaska Game Commission, 1944, A.G.C. Records, Alaska State Library, Juneau.

10. Jean Potter, The Flying North (New York: Macmillan, 1965; originally published 1945) 7.

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11. Tewkesbury's Who's Who in Alaska and Alaska Business Index (Juneau: Tewkesbury Publishers, 1947).

12. Annual Report, Alaska Game Commission, 1956, A.G.C. Records, Alaska State Library, Juneau.

13. (Washington: GPO, 1967). U.S. Federal Aviation Agency, General Aviation in Alaska (Washington: GPO, 1960).

14. Alaska, 49 (May 1983) 27.

15. C. Swaney, "Air Taxi Owner Picks High Life in Talkeetna," Anchorage Times, July 1, 1983, Business section, p. 1.

16. National Public Radio, "Alaska," cassette ME-82-08-23.

17. The Milepost, 1983 (Anchorage: Alaska Northwest, 1983) 231.

18. The law is reprinted in C. W. Allin, The Politics of Wilderness Preservation (Westport, Connecticut: Greenwood Press, 1982) Appendix A.

19. Tundra Times, Sep 3, 1963. Information about Anaktuvuk, and background, is drawn from this issue and from: Tundra Times, Dec 23, 1966; P. Brooks and J. Foote, "The Disturbing Story of Project Chariot," Harper's, 224 (Apr 1962) 60-67; R. D. Arnold, et al, Alaska Native Land Claims (Anchorage: Alaska Native Foundation, 1976) 94, 95.

20. Quoted in Brooks and Foote, "Disturbing Story," 67.

21. Marshall, Alaska Wilderness (Berkeley: University of California Press, 1970; originally published 1956).

22. Alaska National Interest Lands (Anchorage: Alaska Geographic Society, 1981) 12. Italics added. See U.S. Statutes at Large, 94 State. 2371 passim, especially 2423, 2428, 2430.

23. Quoted in J. M. Holzworth, The Wild Grizzlies of Alaska (New York: G. P. Putnam's Sons, 1930) 232.

24. C. L. Andrews, The Story of Alaska (Caldwell, Idaho: Caxton Printers, 1947) 147.

25. Sherwood, Big Game in Alaska, 27, 84, 85, passim.

26. The incident can be documented from periodicals, a paper by the biologists, and correspondence with one of them and with Alaska officials, but names are not important. The episode is included here to demonstrate further that high-tech science can be dangerous to wildlife. Specific documentation will be provided upon request, if needed for scholarly purposes.

27. F. Bruemmer, "Nanook Bears Watching," National Wildlife, 21 (Dec - Jan 1983) 38-42. S. C. Amstrup, "Masters of the Northern Ice," Alaska, 50 (Nov 1984) 35, 36. J. Rearden, "Alaska's Unmanaged Polar Bears," Alaska, 50 (Nov 1984) 36.

28. By Sterling Miller. Alaska, 50 (June 1984).

29. D. Allen, "Movin' Goats," Alaska, 50 (Oct 1983) 71.

30. W. G. Ballard, "The Case of the Disappearing Moose," Alaska, 49 (Jan 1983) 22-25, (Feb 1983) 36-39, (March 1983) 38-41.

31. Bil Gilbert, "Can We Live in Peace with the Grizzly?" Sports Illustrated, 61 (July 1983) 72.

32. Technology and Culture, 8 (July 1967) 335-345.

33. Ballard, "Disappearing Moose," 42.

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